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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,597	12/15/2000	Amir Lahat	2681/OIO70	1236
25937	7590	12/28/2004	EXAMINER	
ZARETSKY & ASSOCIATES PC 8753 W. RUNION DR. PEORIA, AZ 85382-6412			JUNTIMA, NITTAYA	
			ART UNIT	PAPER NUMBER
			2663	

DATE MAILED: 12/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/738,597

Applicant(s)

LAHAT, AMIR

Examiner

Nittaya Juntima

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-23,25,27-39,41 and 43-47 is/are rejected.
- 7) ☒ Claim(s) 3,5,24,26,40 and 42 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is in response to the amendment filed on 8/25/2004.

1. The objections to the declaration, claims, and the rejection under 35 U.S.C. 112, second paragraph are withdrawn in view of applicant's amendment.
2. Claims 1-2, 4-23, 25, 27-39, 41, and 43-47 are rejected under 35 U.S.C. 103(a).
3. Claims 3, 5, 24, 26, 40, and 42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Objections

4. Claims 3, 24, and 40 are objected to because of the following informalities: in line 2 of the claims, "a plurality of TDM ports" should be changed to "the plurality of TDM ports" to refer to the same TDM ports recited in lines 14, 15, and 3 of independent claims 1, 18, and 32, respectively. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 1-2, 4-23, 25, 27-39, 41, and 43-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cox et al. ("Cox") (USPN 6,459,709 B1) in view of Schoo et al. ("Schoo") (USPN 6,304,574 B1).

Regarding claims 1 and 33-34, as shown in Fig. 6, Cox teaches the following:

an ingress buffer (transmit queue logics 601 constitute an ingress buffer) for storing TDM data (E1 data) before encapsulation into Ethernet frames (E1/T1 data is stored in each transmit queue logic 601 before encapsulation, col. 14, ll 41-47 and 50-65),

an egress buffer (receive queue logics 602 constitute an egress buffer) for storing TDM data after received Ethernet frames are segmented (E1/T1 data is stored in each receive queue logic 602 after segmentation, col. 14, ll 41-47 and 50-65),

encapsulation means (application envelope logic 610 and UDP/IP/MAC prefix logic 620) for retrieving TDM data, assembling Ethernet frames and forwarding the assembled Ethernet frames to an Ethernet interface (100 Base Tx port controller 630) (col. 14, ll 54-65 and col. 15, ll 1-20),

segmentation means (application envelope logic 610 and UDP/IP/MAC prefix logic 620) for receiving Ethernet frames from an Ethernet interface, extracting TDM data therefrom and storing said TDM data (col. 15, ll 23-35), and

a processor (a PowerPCO processor card of 520) for receiving TDM data from a plurality of TDM ports (trunk interface logic ports 510 in Fig. 5), storing said TDM data in accordance with output Ethernet frames (E1/T1 data is stored according to its destination switch corresponding to the destination info. in a MAC header, see also Fig. 5), and retrieving TDM data and generating a plurality of synchronous TDM data streams (outgoing E1/T1 streams from

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the receive queue logics 602 to trunk interface logic ports 510) (col. 14, ll 6-23 and col. 15, ll 1-38).

Cox fails to teach the encapsulation means function of inserting a first timestamp related to the TDM data and the segmentation means function of extracting a second timestamp as recited in the independent claim 1.

Schoo teaches, as shown in Fig. 18, an encapsulation means/a segmentation means (a RTP/UDP/IP Header Processing Module 424) for inserting a first timestamp related to TDM data (in the inbound direction, RTP header having a first timestamp related to TDM data, i.e. audio transmitted from the PSTN, is added to the audio packets to be transmitted to LAN), and for extracting a second timestamp (in the outbound direction, RTP header having a second timestamp is removed from audio packets transmitted from LAN). See col. 19, ll 3-19 and 49-59. See also col. 13, ll 52-56.

Given the teaching of Schoo, it would have been obvious to one skilled in the art at the time the invention was made to include the encapsulation means function of inserting a first timestamp related to the TDM data and the segmentation means function of extracting a second timestamp into the teaching of Cox as recited in the independent claim 1. The motivation/suggestion to do so would have been to provide end-to-end delivery for data with real-time characteristics, such as audio data as taught by Schoo (col. 13, ll 33-46).

Per claims 2, 23, and 39, Cox teaches that said plurality of TDM streams (outgoing E1 streams from the receive queue logics 602 of Fig. 6 to trunk interface logic ports 510 of Fig. 5) comprises E1 streams (col. 15, ll 35-38).

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Per claims 4, 25, and 41, Cox teaches that said encapsulation means (application envelope logic 610 and UDP/IP/MAC prefix logic 620) encapsulates data from a plurality of TDM frames (two E1 frames from a trunk interface logic 510 in Fig. 5) corresponding to a single TDM port (a trunk interface logic 510 in Fig. 5) into a single Ethernet frame (an Ethernet packet) (col. 15, ll 1-20).

Per claims 6, 27, and 43, Cox teaches that said segmentation means (application envelope logic 610 and UDP/IP/MAC prefix logic 620) segments an Ethernet frame (an Ethernet packet) into a plurality of TDM frames (two-E1 frames destined to a specific port) corresponding to a single TDM port (a specific port, e.g. a trunk interface logic 510 in Fig. 5) (col. 15, ll 23-38, see also ll 9-13 and Fig. 7).

Per claims 7, 28, and 44, Cox teaches that said processor (a PowerPCO processor card) stores TDM data (E1 data) received from a plurality of TDM ports (trunk interface logics 510 in Fig. 5) in accordance with specific port based parameters (specific port based parameters are not defined, read on destination switches A-N corresponding to each trunk interface logic, Figs. 4-6, col. 14, ll 6-23 and col. 15, ll 1-38).

Per claims 8, 29, and 45, Cox teaches that said processor (a PowerPCO processor card) stores TDM data (E1 data) received from a plurality of TDM ports (trunk interface logics 510 in Fig. 5) in accordance with specific time based parameters (specific time based parameters are not defined, read on 250 microseconds, Figs. 4-6, col. 14, ll 6-23 and col. 15, ll 1-38).

Per claim 9, Cox teaches that said encapsulation means (application envelope logic 610 and UDP/IP/MAC prefix logic 620) receives TDM data (E1 data) on a plurality of constant

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synchronous serial bit streams (E1 streams from transmit queue logics 601 in Fig. 6, col. 15, ll 1-20).

Per claim 10, the combined teaching of Cox and Schoo fails to teach that said encapsulation means (application envelope logic 610 and UDP/IP/MAC prefix logic 620) performs encryption on the TDM data (E1 data) before packaging the TDM data into Ethernet frames. However, it would have been obvious to one skilled in the art to include encryption into the combined teaching of Cox and Schoo such that the encapsulation means would perform encryption on the TDM data (E1 data) before packaging the TDM data into Ethernet frames. The motivation/suggestion to do so would have been to provide data privacy and security which are the benefits of data encryption.

Per claim 11, the combined teaching of Cox and Schoo fails to teach that said encapsulation means (application envelope logic 610 and UDP/IP/MAC prefix logic 620) performs compression on the TDM data (E1 data) before packaging the TDM data into Ethernet frames. However, it would have been obvious to one skilled in the art to include compression into the combined teaching of Cox and Schoo such that the encapsulation means would perform compression on the TDM data (E1 data) before packaging the TDM data into Ethernet frames. The motivation/suggestion to do so would have been to save time and capacity which are the well known benefits of data compression.

Per claim 12, Cox teaches that the encapsulation means (application envelope logic 610 and UDP/IP/MAC prefix logic 620) calculates a CRC code (checksum) when packaging the TDM data (E1 data) into Ethernet frames because a UDP header contains a checksum which uses CRC code (col. 15, ll 1-20).

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Per claims 13, 30, and 46, Cox teaches means for packaging TDM stream data into UDP packets, then into IP packets, and finally into Ethernet frames (application envelope logic 610), and means for generating appropriate header information for the UDP and IP packets and Ethernet frames (UDP/IP/MAC prefix logic 620). See col. 15, ll 1-20.

However, Cox fails to explicitly teach that means for packaging also packages TDM stream data into RTP packets and means for generating also generates appropriate header information for the RTP packets.

However, as shown in Fig. 18, Schoo teaches packaging TDM stream data (inbound TDM data) into RTP packets (col. 19, ll 3-12) and generating appropriate header (RTP header) information for the RTP packets (col. 19, ll 3-12, see also col. 13, ll 52-56).

Given the teaching of Schoo, it would have been obvious to one skilled in the art to incorporate packaging TDM stream data into RTP packets and generating appropriate header information for the RTP packets into the teaching of Cox such that means for packaging would package TDM stream data into RTP packets and means for generating would generate appropriate header information for the RTP packets as recited in the claim. The suggestion/motivation to do so would have been to provide end-to-end delivery for data with real-time characteristics, such as audio data, as taught by Schoo (col. 13, ll 33-46).

Per claim 14, Cox teaches that said encapsulation means (application envelope logic 610 and UDP/IP/MAC prefix logic 620) forwards Ethernet frames towards an Ethernet MAC device (network interface logic 530 in Fig. 5, col. 15, ll 18-22 and col. 14, ll 18-23).

Per claims 15, 31, and 47, Cox teaches means (application envelope logic 610) for extracting TDM stream data from the contents of (payload) a UDP packet and IP packet

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extracted from an Ethernet frame and means (application envelope logic 610) for storing the TDM data in the egress buffer (one of the receive queue logics A in Fig. 6). See col. 15, ll 23-38.

However, Cox does not teach that means for extracting extracts TDM stream data from the contents of a RTP packet and means for storing stores the TDM data in the egress buffer in accordance with the contents of RTP header information.

With regards to extracting TDM data, as shown in Fig. 18, Schoo teaches means for extracting TDM stream data from the contents of a RTP packet (col. 19, ll 13-19). Therefore, it would have been obvious to one skilled in the art to include extracting TDM stream data from the contents of a RTP packet of Schoo into the means for extracting of Cox. The suggestion/motivation to do so would have been to transmit the extracted data to the PSTN as taught by Schoo (col. 19, ll 49-59).

With regards to storing TDM data in accordance with the contents of RTP header information, since Schoo teaches RTP header information having sequence number (col. 13, ll 39-41). Therefore, it would have been to one skilled in the art to modify the combined teaching of Cox and Schoo such that means for storing would store the TDM data in the egress buffer in accordance with the contents of RTP header information. The suggestion/motivation to do so would have been to enable the egress buffer to store the queued TDM data according to its RTP header information, i.e. sequence number, in order to preserve the order of the data.

Per claim 16, Cox teaches that the processor (a PowerPCO processor card, col. 14, ll 14-23) performs rate adaptation between a plurality of TDM ports (trunk interface logic ports 510 in Fig. 5) and an egress buffer interface (network interface logic 530 in Fig. 5) because the egress

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buffer interface is communicating with the router (430 in Fig. 4) at a data rate which is much higher than the data rate of the TDM ports, therefore, rate adaptation must be performed to provide data transmission between the TDM ports and the egress buffer interface.

Per claim 17, Cox teaches that said processor (a PowerPCO processor card) forwards TDM frames (TDM frames destined to the same switch as shown in Fig. 7) to appropriate TDM ports (a specific port) as a constant synchronous serial bit stream (col. 14, ll 6-23 and col. 15, ll 23-38, see also ll 9-13).

Per claim 18, Cox teaches the limitations as recited in claim 1 and the following additional limitations: a plurality of TDM port interfaces (output ports of switch A connecting to multiplexer A in Fig. 4) coupled to a plurality of TDM ports (trunk interface logic ports 510 in Fig. 5), each TDM port receives a constant synchronous serial TDM bit stream (E1 stream), and at least one Ethernet interface (100 Base Tx port controller 630 in Fig. 6) coupled to the Ethernet network (high speed data network 440 in Fig. 4).

Per claims 19-22 and 35-38, as shown in Fig. 6, Cox teaches that the Ethernet interface (100 Base Tx port controller 630) comprises a 100Base-T Ethernet interface. However, the combined teaching of Cox and Schoo fails to teach that the Ethernet interface comprises a 10Base-T Ethernet interface, a 1000Base-T Ethernet interface, or a 10Gigabit Ethernet interface. However, it would have been obvious to one skilled in the art to modify the combined teaching of Cox and Schoo to include into the Ethernet interface a 10Base-T Ethernet interface, a 1000Base-T Ethernet interface, or a 10Gigabit Ethernet interface in order to appropriately accommodate different traffic volumes as such modification involves only routine skills in the art.

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Claim 32 is a method claim corresponding to an apparatus claim 1 with the additional steps of generating TDM streams (E1 streams) therefrom and forwarding said generated TDM streams to an appropriate TDM port (a specific port) in a synchronous manner (col. 14, ll 50-65 and 15, ll 1-38), and the exception of the storing steps. Therefore, claim 32 is rejected under the same reason set forth in the rejection of claim 1.

Response to Arguments

7. Applicant's arguments with respect to claims 1-2, 4-23, 25, 27-39, 41, and 43-47 have been considered but are moot in view of the new ground(s) of rejection.

A. In the remarks regarding independent claims 1, 18 and 32, the applicant argues that neither Cox nor Schoo teaches the step of inserting and extracting a timestamp information related to the TDM data into and from the Ethernet frame, and the transport facility that packages a plurality of TDM streams into a single Ethernet frame and is not necessarily limited to only two T1 or E1 frames or audio frames.

In response, regarding the step of inserting and extracting a timestamp information, although Cox teaches a system (400 in Fig. 4) for providing T1/E1 interconnections over a high bandwidth packet-switched data network wherein the system includes a plurality of T1/E1s carrying telecommunication signals, i.e. *audio signals* (see col. 12, ll 66-col. 13, ll 1-4), Cox fails to teach the encapsulation means function of inserting a first timestamp related to the TDM data and the segmentation means function of extracting a second timestamp as recited in the independent claims 1, 18, and 32.

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However, Schoo teaches, as shown in Fig. 18, an encapsulation means/a segmentation means (a RTP/UDP/IP Header Processing Module 424) for inserting a first timestamp related to TDM data (in the inbound direction, RTP header having a first timestamp related to TDM data, i.e. *audio transmitted from the PSTN*, is added to the audio packets to be transmitted to LAN), and for extracting a second timestamp (in the outbound direction, RTP header having a second timestamp is removed from audio packets transmitted from LAN). See col. 19, ll 3-19 and 49-59, see also col. 13, ll 52-56.

Since the teachings of both Cox and Schoo are related to packaging audio TDM data into Ethernet frames, therefore, it would have been obvious to one skilled in the art at the time the invention was made to include the encapsulation means function of inserting a first timestamp related to the TDM data and the segmentation means function of extracting a second timestamp of Schoo into the teaching of Cox. The motivation/suggestion to do so would have been to provide end-to-end delivery for data with real-time characteristics, such as audio data as taught by Schoo (col. 13, ll 33-46). Applicant fails to point out the error in the motivation in the rejection.

Further, regarding the transport facility, it is noted that the features upon which applicant relies (i.e. the transport facility that packages a plurality of TDM streams into a single Ethernet frame and is not necessarily limited to only two T1 or E1 frames or audio frames) are not recited in the rejected independent claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims.

Therefore, the rejection is maintained.

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B. Claims 2, 4, 6-17, 19-23, 25, 27-31, 33-39, 41, and 43-47 depend on the respective claims 1, 18, and 32, and therefore are rejected for the reason set forth in the rejections of claims 1, 18, and 32.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nittaya Juntima whose telephone number is 571-272-3120. The examiner can normally be reached on Monday through Friday, 8:00 A.M - 5:00 P.M.

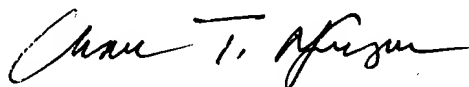
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on 571-272-3126. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nittaya Juntima
December 13, 2004

N



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